Section 2C Review

Part 1: Determine the molar mass of the following compounds:

1) ammonium chloride _____

2) potassium phosphate _____

3) copper (II) carbonate _____

4) magnesium iodide _____

5) lithium sulfide _____

6) manganese (V) iodate _____

Part 2: Answer the following questions about percent composition:

7) Determine the percent composition of each element in the compound $AgNO_3$

8) A 3.05 g compound is made of 21.6 % Mg, 21.4 % C and 57.0 % O. What is the mass of each element in the compound?

Part 3: Perform the following mole conversions (show set up with unit factors):

9) 42.0 g of sodium hydroxide ----> moles

10) 45.0 g chlorine gas -----> liters (at STP)

11) 7.67×10^{25} atoms helium ---> liters (at STP)

12) 98.0 g strontium nitrate ----> molecules

13) 7.35×10^{22} atoms copper ----> moles

14) 1.2045 moles fluorine gas ---> liters (at STP)

Part 4: Answer the following questions about empirical and molecular formulas:

15a) The analysis of an organic compound finds the materials make up is 40.7 % C, 5.1% H and 54.2% O by mass. The molar mass of the compound is 236.18 g/mol. What is the empirical and molecular formula for the compound?

16) Determine the empirical and molecular formula of the compound listed in number 8 above if the molar mass of the compound is 112.3 g/mol.

17) Asbestos is a very harmful substance that can cause cancer if inhaled. A 5.00 g sample of asbestos contains 1.32 g Mg, 1.01 g Si, 0.08 g H and 2.59 g O. What is the empirical formula for asbestos?

18) One of the substances needed to make nylon is sebacoyl chloride, which is 50.2% C, 6.7 % H, 13.4% O and 29.7% Cl. With a molar mass of 239.14 g/mol, what is the molecular formula for sebacoyl chloride?